

REMARKS

The amendments to the specification correct typographical errors. At page 15, example 6 refers in part to the peroxide level of two different fuels. Figure 1, however, is the process schematic and Figure 2 is the plot of peroxide numbers. Clearly, Figure 2 is the correct reference, not Figure 1. Claims 1 and 7 have been amended to limit the amount of oxygenates present, as oxygen on a water free basis, to the preferred range of 0.0025-0.3 wt% oxygen. Support can be found on page 9 of the specification. Claims 2 and 5 have been amended to include applicants' preferred oxygen compounds, primarily C₁₂-C₂₄ linear alcohols. Support can be found on page 8 of the specification. Finally, new claims 15-19 have been added relating to blends comprising the distillate material of this invention. Support can be found on page 7, third paragraph of the specification.

In its preferred embodiment, this invention relates to a distillate material useful as a diesel fuel, derived from a wax containing Fischer-Tropsch product. In particular, the distillate is produced by separating the wax containing Fischer-Tropsch product into a heavy fraction and a lighter fraction. The lighter fraction is further separated into at least two other fractions; one of which contains primarily C₁₂-C₂₄ linear alcohols. The heavier fraction from the first separation is combined with the fraction not containing the C₁₂-C₂₄ linear alcohols, i.e., a C₅- 500° F fraction, and the combined fraction is hydroisomerized. The C₁₂-C₂₄ linear alcohol containing fraction is blended with a 700° F- fraction of the hydroisomerized product to produce a hydrocarbon distillate material.

In the parent application, U.S. Serial No. 971,254, the Examiner rejected claims 1-14 in a Final Action mailed December 16, 1999, as being unpatentable over Hamner et al., U.S.P. 4,919,786 in view of Dinh et al. U.S.P. 4,125,566.

The preferred embodiment of applicants' invention as described and claimed in this application, has as its essence, the hydrotreating of the entire C₅+ product from the Fischer-Tropsch process with the exception of a nominally 500-700° F cut which contains the C₁₂+ primary alcohols, the latter being subsequently blended back with the hydroisomerized product, from which a distillate fuel is recovered. Applicants have found that by circumventing the hydrotreatment of this particular boiling fraction and later blending it back with the hydrotreated material, provides exceptional lubricity and product stability for Fischer-Tropsch derived diesel fuels. Ordinarily, the entire Fischer-Tropsch product is hydrotreated and lubricity and stability additives must be employed to make a useful diesel fuel.

Turning now to the Hamner reference, applicants' submit that this reference fails to disclose or render obvious the claims of the instant invention. Thus, Hamner recovers a Fischer-Tropsch product and separates it into two fractions. There are then two essential failings of the Hamner reference: (1) there is no additional separation of the light fraction, and (2) the Fischer-Tropsch stream containing the C₁₂+ primary alcohols are hydrotreated rather than bypassed.

The first point is clear from Hamner at col. 3, lines 36 et seq. Where there is absolutely no mention of a further separation of the lighter fraction. Moreover, at the bottom of col. 4, lines 67-68, the Hamner reference refers to the low boiling fraction as containing water and olefinic - oxygenate - components. Applicants, however, further separate the light fraction and hydrotreat the fraction boiling below the C₁₂+ alcohol containing fraction. By hydrotreating this fraction, the olefins, which are primarily concentrated in the lighter Fischer-Tropsch liquids, are substantially eliminated and can not serve to promote instability of the distillate fuel.

Applicants have clearly exemplified this instability issue in Figure 2 which contains a plot of peroxide number for different diesel fuels and is referred to on page 15 of the specification. The example shows the buildup of peroxide number (representing instability) of the unhydrotreated 250-500°F fraction which contains the bulk of the olefins, relative to the essentially stable 500-700°F fraction which contains the C₁₂+ alcohols and very low unsaturates, e.g. olefins.

Consequently, Hamner fails to hydrotreat the olefinic fraction, therefore the material thereby obtained cannot meet the stability requirements of the material obtained when applicants hydrotreat the olefin containing fraction (the (b) (ii) fraction of applicants' claims). Hamner also does not, therefore, suggest in any way the relatively stable product of claims 1-4 and 8.

The second failing of the Hamner reference is the cut point chosen for the initial separation of Fischer-Tropsch product. Thus, Hamner, at col. 5, recites a cut point between about "450°F and about 650°F, preferably between about 550°F and about 600°F." (emphasis added) Hamner has, therefore, missed the essence of applicants' invention because he will hydrotreat everything above this cut point and he will hydrogenate most, and likely all, of the very fraction that applicants wish to bypass, i.e., the fraction containing the C₁₂+ primary alcohols, generally contained in the 500-700°F cut.

The Examiner specifically cites claim 23 of Hamner for the reblending of an unhydroprocessed low boiling fraction with the distillate boiling fraction of hydroprocessing. This reblending in Hamner will result in a 320-550°F unhydroprocessed fraction in the fuel, and is contrary to applicants' invention where this fraction is hydroprocessed, thereby virtually eliminating olefins from the diesel fuel and improving its stability, as shown in applicants' example 7 and in Figure 2.

The Dinh reference fails to remedy the failings of the Hamner reference in that its reference to Fischer-Tropsch derived fuels results from fluid catalytic cracking and polymerization to produce the fuel, processes absent from and totally different from applicants' claimed process. Further, Dinh teaches the production of oxygen free products, see col. 5, lines 10-20, where Dinh teaches the decarboxylation of the "light oil" and the "decanted oil" in fluid catalytic cracking zone 8. That the products of this decarboxylation are hydrotreated is clearly shown at col. 2, lines 32-39, 50-51, and 57-58. Consequently, Dinh, too, never recognizes the invention described and claimed by applicants.

Applicants will file a Terminal Disclaimer to overcome the Examiner's rejection under obviousness-type double patenting upon allowance of the pending claims.

Lastly, applicants wish to make the Examiner aware of the related co-pending application Serial No. 08/544,343.

In view of the foregoing remarks, applicants respectfully request reconsideration and allowance of the pending claims.

Respectfully submitted,



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